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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/886,646	06/21/2001	David Burnett	620-010334-US(PAR)	6138
2512	7590	01/15/2004	EXAMINER	
PERMAN & GREEN 425 POST ROAD FAIRFIELD, CT 06824			MARKHAM, WESLEY D	
			ART UNIT	PAPER NUMBER
			1762	

DATE MAILED: 01/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.	Applicant(s)	
09/886,646	BURNETT, DAVID	
Examiner	Art Unit	
Wesley D Markham	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If no period is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) 14-17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 1 total.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group I, Claims 1 – 13, drawn to a light-refracting, color-enhancing composition, in the response filed on 11/10/2003 (with a certificate of mailing dated 11/7/2003) is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)). Claims 14 – 17 are withdrawn from further consideration by the examiner as being drawn to a non-elected invention. An Office Action on the merits follows.

Information Disclosure Statement

2. The IDS filed by the applicant on 6/21/2001 is acknowledged, and the references listed thereon have been considered by the examiner as indicated on the attached copy of the PTO-1449 form.

Specification

3. The use of the trademark RELASTON has been noted in this application (see page 5, line 2, of the specification). It should be capitalized wherever it appears and be accompanied by the generic terminology. Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

4. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: Claim 3 requires that the maximum diameter of the beads be between 12 and 18 microns. The specification does not have proper antecedent basis for this limitation.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1 – 3 and 7 – 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
7. Specifically, independent Claim 1 (from which Claims 2, 3, and 7 – 12 depend) requires that the composition comprise “transparent or translucent glass plastic beads”. After reviewing the specification of the instant application and the general state of the art, the examiner notes that it is unclear to what a “glass plastic” bead refers. In other words, what types of beads (e.g., by chemical composition) qualify as “glass plastic beads”? Since it is unclear what types of beads are encompassed by the limitation “glass plastic beads”, the scope of Claim 1 (and therefore the scope of Claims 2, 3, and 7 – 12) is vague, and the claims are indefinite under 35 U.S.C. 112, second paragraph. Please note that Claims 4 – 6 and 13 have not been rejected

under 35 U.S.C. 112, second paragraph, because these claims specify that the beads are glass beads. For the purposes of examination only, the examiner has interpreted the term "glass plastic beads" in Claim 1 to be equivalent to "glass or plastic beads".

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1 – 5 and 7 – 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over PPG Industries (WO 00/75242 A2) in view of Tanaka et al. (WO 97/48772 A1). Please note that USPN 6,340,519 B1 corresponds to the 371 (i.e., National Stage) Application of WO 97/48772 A1 and is being used as an effective English-language translation of the aforementioned WO document (which was published in Japanese).
10. Regarding independent Claim 1, PPG teaches a light-refracting, color-enhancing composition for applying coatings to a substrate, the composition comprising a mixture of (1) transparent or translucent glass beads having a diameter up to about 70 microns, and (2) a resinous binder material which cures to form a light-refracting paint layer (Abstract; page 2, lines 2 – 6; page 3, lines 1 – 13; page 4, lines 3 – 15; page 5, lines 1 – 4; page 6, lines 1 – 11 and 19 – 28; page 7, lines 1 – 12; page 8,

lines 6 – 28; page 9; page 10, lines 1 – 19; page 11, lines 26 – 28; pages 12 – 13; page 14, lines 1 – 16; page 21, lines 4 – 14; page 29; and page 30, lines 1 – 23).

PPG does not explicitly teach that the coating composition comprises pelletized rubber. However, the coating compositions of PPG are clearly open to containing a wide variety of different additives (page 9, lines 16 – 21; page 14, lines 1 – 16).

Tanaka et al. teaches an analogous coating composition that can be utilized as a chipping-resistant paint for coating automobiles (i.e., a similar application to that of PPG) (Abstract). Tanaka et al. teaches that the paint can contain “reinforcing materials” such as natural or synthetic rubber powder (i.e., “pelletized rubber”) in addition to the film-formable resin (Col.5, lines 64 – 67, and Col.6, lines 1 – 7).

Therefore, it would have been obvious to one of ordinary skill in the art to incorporate the rubber powder (i.e., the “pelletized rubber”) of Tanaka et al. into the coating / paint composition of PPG with the reasonable expectation of successfully and advantageously reinforcing the coating (i.e., increasing the chip-resistance of the coating). The combination of PPG and Tanaka et al. does not explicitly teach that the composition cures to form a hard, translucent paint layer. However, this statement regarding the curing of the composition is simply a statement of intended use and is not read into or given patentable weight in a composition claim.

Additionally, the coating composition taught by the combination of PPG and Tanaka et al. is identical to the applicant's claimed composition and is capable of being cured to form a paint layer (see pages 29 and 30 of PPG). Therefore, unless essential components are missing from the applicant's claimed composition, the

composition of the combination of PPG and Tanaka et al. would inherently form a hard, translucent, light-refracting paint layer when cured.

11. The combination of PPG and Tanaka et al. also teaches all the limitations of Claims 2 – 5 and 7 – 13 as set forth above in paragraph 10 and below, including a composition wherein / further comprising:

- Claims 2 and 3: The beads have a maximum diameter within the range of about 10 to 20 microns (Claim 2), particularly between 12 and 18 microns (Claim 3). Specifically, PPG teaches that the microsphere beads have a diameter ranging from about 1 to about 500 microns, preferably about 1 to about 50 microns (page 4, lines 11 – 15; page 6, lines 25 – 26). This range of bead diameters encompasses the applicant's claimed range, and it would have been obvious to one of ordinary skill in the art to select the portion of the range taught by PPG that corresponds to the applicant's claimed range because such bead diameters can clearly be successfully utilized in the composition of PPG. Please note that when claimed ranges lie inside ranges disclosed by the prior art, a *prima facie* case of obviousness exists (See MPEP 2144.05(I)).
- Claims 4 and 5: The beads are clear glass and have a refractive index between about 1.5 and 2.5 (Claim 4), particularly between about 1.9 and 2.1 (Claim 5) (page 5, lines 1 – 4; page 6, lines 1 – 11; and page 7, lines 1 – 3 of PPG).

- Claims 7 and 8: The pelletized rubber particles have a diameter up to about 150 microns (Claim 7) (Col.6, lines 2 – 4, of Tanaka et al.), and the pelletized rubber content is between about 2% and 40% by weight (Claim 8) (Col.6, lines 6 – 7 of Tanaka et al.).
- Claim 9: The binder material comprises a mixture of a pre-polymer having reactive sites, and a poly-functional cross-linking agent which is reactive with said sites to cure the binder material (page 7, lines 4 – 12; page 8, lines 6 – 28; page 9, lines 1 – 26; page 12; and page 13, lines 1 – 11 of PPG).
- Claim 10: The resinous binder material contains a volatile solvent or vehicle which is evaporated to dry the coating below the baking temperature of the paint composition (page 9, lines 19 – 20; page 13, lines 12 – 27; and pages 29 – 30 of PPG).
- Claim 11: The volatile solvent is an organic solvent (page 9, lines 19 – 20; page 13, lines 12 – 27 of PPG), and the coating composition has a solids content above about 60% (page 10, lines 1 – 3; page 13, lines 27 – 28 of PPG).
- Claim 12: The volatile vehicle is water (page 9, line 20; page 13, lines 12 – 13 of PPG).
- Claim 13: The glass bead content is between about 10 – 20% by weight of the composition. This limitation is not explicitly taught by the combination of PPG and Tanaka et al. However, PPG does teach that the amount of microsphere beads included in the coating compositions can vary depending

upon the average diameter of the beads and the amount and particle size of the other components, such as pigments, in the coating compositions (page 19, lines 12 – 15). PPG also teaches that the amount of beads in the coating composition should be sufficient to yield a component having daytime unnoticeability and nighttime retroreflectivity (page 19, lines 15 – 21). In other words, PPG teaches that the amount of beads in the coating composition is a result / effective variable that determines the retroreflectivity of the coated substrate. Therefore, it would have been obvious to one of ordinary skill in the art to optimize the glass bead content of the coating composition of the combination of PPG and Tanaka et al. as a result / effective variable through routine experimentation with the reasonable expectation of successfully and advantageously obtaining a coating composition that, when coated on a substrate, can provide the substrate with the desired amount of retroreflectivity. In optimizing the glass bead content, one of ordinary skill in the art would have balanced factors such as daytime unnoticeability and nighttime retroreflectivity and would have taken into consideration factors such as the average diameter of the beads and the amount and particle size of the other components, such as pigments, in the coating composition.

12. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over PPG Industries (WO 00/75242 A2) in view of Tanaka et al. (WO 97/48772 A1), and in further view of either DeMaster (USPN 4,035,059) or Nakajima (USPN 5,777,790).

13. The combination of PPG and Tanaka et al. teaches all the limitations of Claim 6 as set forth above in paragraphs 10 and 11, except for a composition in which the glass beads comprise a mixture of beads having different refractive indexes. However, PPG's teaching that the average index of refraction of the microsphere beads is about 1.9 (page 7, lines 1 – 3) at least suggests to one of ordinary skill in the art that all of the glass beads in the coating composition are not required to have the same refractive index. Additionally, the goal of PPG is to provide a retroreflective coating composition (Abstract). DeMaster teaches that, in order to obtain retroreflection under both wet and dry conditions, a mixture of microspheres having different refractive indexes should be utilized (Col.3, lines 58 – 68, and Col.4, lines 1 – 8). Nakajima teaches that retroreflective performance is improved when microspheres having different refractive indexes are mixed (Abstract, Col.2, lines 24 – 46, and Col.4, lines 30 – 38). Therefore, it would have been obvious to one of ordinary skill in the art to utilize a mixture of beads having different refractive indexes in the coating composition of the combination of PPG and Tanaka et al. with the reasonable expectation of successfully and advantageously improving the retroreflective performance of the coating, as taught by either DeMaster or Nakajima.
14. Claims 1 – 5 and 7 – 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bridgestone Corp (JP 08-104827 A) in view of PPG Industries (WO 00/75242 A2).

15. Regarding independent Claim 1, Bridgestone Corp teaches a light-refracting, color enhancing composition for applying coatings to a substrate (e.g., the road), comprising a mixture of (1) pelletized rubber, (2) transparent or translucent glass beads having a diameter of approximately 1 mm (1000 microns) as a light-reflecting material, and (3) a resinous binder material (Abstract, paragraphs [0001], [0005] – [0010]). Bridgestone Corp does not explicitly teach that the beads have a diameter up to about 70 microns. However, Bridgestone Corp does teach that the beads are utilized as a light-reflecting material in the coating composition (Abstract). PPG teaches that, in the art of retroreflective coating compositions, the beads should have a diameter of about 50 microns or less to achieve the highest retroreflectivity (page 4, lines 11 – 15; page 6, lines 25 – 26). Therefore, it would have been obvious to one of ordinary skill in the art to utilize the transparent glass beads taught by PPG and having a diameter of about 50 microns or less (i.e., a range within the applicant's claimed range) in the coating composition of Bridgestone Corp with the reasonable expectation of successfully and advantageously achieving a coating with high retroreflectivity. This would clearly be beneficial in the composition of Bridgestone Corp, in which the glass beads are intended to be used as a "light-reflecting material", and the composition is intended to be used for road marking / painting (Abstract). Additionally, the combination of Bridgestone Corp and PPG does not explicitly teach that the composition cures to form a hard, translucent, light-refracting paint layer. However, this statement regarding the curing of the composition is simply a statement of intended use and is not read into or given

patentable weight in a composition claim. Additionally, the coating composition taught by the combination of Bridgestone Corp and PPG is identical to the applicant's claimed composition (see the discussion above). Therefore, unless essential components are missing from the applicant's claimed composition, the composition of the combination of Bridgestone Corp and PPG would inherently form a hard, translucent, light-refracting paint layer when cured.

16. The combination of Bridgestone Corp and PPG also teaches all the limitations of Claims 2 – 5 and 7 – 13 as set forth above in paragraph 15 and below, including a composition wherein / further comprising:

- Claims 2 and 3: The beads have a maximum diameter within the range of about 10 to 20 microns (Claim 2), particularly between 12 and 18 microns (Claim 3). Specifically, PPG teaches that the microsphere beads have a diameter ranging from about 1 to about 500 microns, preferably about 1 to about 50 microns (page 4, lines 11 – 15; page 6, lines 25 – 26). This range of bead diameters encompasses the applicant's claimed range, and it would have been obvious to one of ordinary skill in the art to select the portion of the range taught by PPG that corresponds to the applicant's claimed range because such bead diameters can clearly be successfully utilized in the composition of the combination of Bridgestone Corp and PPG. Please note that when claimed ranges lie inside ranges disclosed by the prior art, a *prima facie* case of obviousness exists (See MPEP 2144.05(I)).

- Claims 4 and 5: The beads are clear glass and have a refractive index between about 1.5 and 2.5 (Claim 4), particularly between about 1.9 and 2.1 (Claim 5) (page 5, lines 1 – 4; page 6, lines 1 – 11; and page 7, lines 1 – 3 of PPG).
- Claims 7 and 8: The pelletized rubber particles have a diameter up to about 150 microns (Claim 7) (Abstract and paragraph [0007] of Bridgestone Corp), and the pelletized rubber content is between about 2% and 40% by weight (Claim 8) (Abstract and paragraph [0006] of Bridgestone Corp).
- Claims 9 – 12: The binder material comprises a mixture of a pre-polymer having reactive sites, and a poly-functional cross-linking agent which is reactive with said sites to cure the binder material (Claim 9); the resinous binder material contains a volatile solvent or vehicle which is evaporated to dry the coating below the baking temperature of the paint composition (Claim 10); the volatile solvent is an organic solvent, and the coating composition has a solids content above about 60% (Claim 11); and the volatile vehicle is water (Claim 12). Specifically, Bridgestone Corp teaches that a variety of resins, including epoxy, urethane, and acrylic resins, can be utilized as the binder material (paragraph [0008]), but is silent regarding the specifics of these resins and how they are incorporated into the coating composition. PPG teaches similar glass bead-containing, light-reflecting coating compositions in which resins such as epoxy, urethane, and/or acrylic resins (i.e., the same resins taught by Bridgestone Corp) are utilized as binder

materials (page 8, lines 14 – 16). Additionally, the resin systems taught by PPG meet the limitations of applicant's Claims 9 – 12 (see the discussion of Claims 9 – 12 in paragraph 11 above). It would have been obvious to one of ordinary skill in the art to formulate the resin-based coating composition of Bridgestone Corp in the manner taught by PPG because Bridgestone Corp teaches that a variety of resins, including epoxy, urethane, and acrylic resins, can be utilized as the binder material, and PPG teaches specific epoxy, urethane, and acrylic resin / solvent systems that are suitable for use as binders in glass bead-containing, light-reflecting coating compositions.

- Claim 13: The glass bead content is between about 10 – 20% by weight of the composition. This limitation is not explicitly taught by the combination of Bridgestone Corp and PPG. However, PPG does teach that the amount of microsphere beads included in the coating compositions can vary depending upon the average diameter of the beads and the amount and particle size of the other components, such as pigments, in the coating compositions (page 19, lines 12 – 15). PPG also teaches that the amount of beads in the coating composition should be sufficient to yield a component having daytime unnoticeability and nighttime retroreflectivity (page 19, lines 15 – 21). In other words, PPG teaches that the amount of beads in the coating composition is a result / effective variable that determines the retroreflectivity of the coating. Therefore, it would have been obvious to one of ordinary skill in the art to optimize the glass bead content of the coating composition of the combination

of Bridgestone Corp and PPG as a result / effective variable through routine experimentation with the reasonable expectation of successfully and advantageously obtaining a coating composition that, when coated on a support such as a road, can provide a road marking with the desired amount of retroreflectivity. In optimizing the glass bead content, one of ordinary skill in the art would have balanced factors such as daytime unnoticeability and nighttime retroreflectivity and would have taken into consideration factors such as the average diameter of the beads and the amount and particle size of the other components, such as pigments, in the coating composition.

17. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bridgestone Corp (JP 08-104827 A) in view of PPG Industries (WO 00/75242 A2), and in further view of either DeMaster (USPN 4,035,059) or Nakajima (USPN 5,777,790).
18. The combination of Bridgestone Corp and PPG teaches all the limitations of Claim 6 as set forth above in paragraphs 15 and 16, except for a composition in which the glass beads comprise a mixture of beads having different refractive indexes. However, PPG's teaching that the average index of refraction of the microsphere beads should be about 1.9 (page 7, lines 1 – 3) at least suggests to one of ordinary skill in the art that all of the glass beads in a reflective coating composition are not required to have the same refractive index. DeMaster teaches that, in order to obtain retroreflection under both wet and dry conditions, a mixture of microspheres having different refractive indexes should be utilized (Col.3, lines 58 – 68, and Col.4, lines 1

- 8). Nakajima teaches that retroreflective performance is improved when microspheres having different refractive indexes are mixed (Abstract, Col.2, lines 24 - 46, and Col.4, lines 30 - 38). Therefore, it would have been obvious to one of ordinary skill in the art to utilize a mixture of beads having different refractive indexes in the coating composition of the combination of Bridgestone Corp and PPG with the reasonable expectation of successfully and advantageously improving the retroreflective performance of the road marking composition, as taught by either DeMaster or Nakajima.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wesley D Markham whose telephone number is (571) 272-1422. The examiner can normally be reached on Monday - Friday, 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (571) 272-1415. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Wesley D Markham
Examiner
Art Unit 1762

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WDM



SHRIVE P. BECK
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700